

CLAIMS

What is claimed is:

1. Apparatus for solar energy collection comprising:
 - a) one or more Fresnel lenses, each Fresnel lens having a focal axis;
 - 5 b) one or more energy absorbers, each energy absorber having one or more internal absorption ducts for transferring solar energy absorbed by the energy absorber to an absorption liquid;
 - c) one or more support frames, each support frame securing a respective Fresnel lens in a respective focus position for focusing solar energy
10 passing the Fresnel lens on an absorption zone of an energy absorber; and
 - d) one or more solar tracking drives affixed to the support frames for maintaining alinement of the focal axis of each of the Fresnel lenses with the sun and maintaining each of the Fresnel lenses in a respective
15 focus position during a desired period of operation.
2. Apparatus as recited in claim 1 wherein the energy absorbers are absorption conduits.
- 20 3. Apparatus as recited in claim 1 further comprising an absorption liquid circulating system connected to the absorption ducts in each energy absorber.

4. Apparatus as recited in claim 2 wherein each absorption zone is comprised of an energy assimilator of high thermal conductivity material affixed to the absorption conduit.

5. Apparatus as recited in claim 4 wherein each energy assimilator is spherically shaped.

6. Apparatus as recited in claim 1 wherein the absorption zone of each energy absorber is encapsulated in an energy retaining capsule of material with a high solar radiation transmission rate and a low thermal conductivity rate.

7. Apparatus as recited in claim 6 wherein the energy retaining capsule is comprised of transparent material.

8. Apparatus as recited in claim 6 wherein the energy retaining capsule is spherically shaped.

9. Apparatus as recited in claim 7 wherein the transparent material is a borsilicate glass.

10. Apparatus as recited in claim 3 wherein the absorption liquid circulating system comprises an absorption liquid conduit system and one or more absorption liquid pumps.

11. Apparatus as recited in claim 3 wherein the absorption liquid is an oil.

12. Apparatus as recited in claim 3 further comprising an energy transfer system connected to the absorption liquid circulating system.

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13. Apparatus as recited in claim 12 wherein the transfer liquid is water.

14. Apparatus as recited in claim 12 wherein the energy transfer system comprises an energy exchanger, a transfer liquid conduit system and one or more transfer liquid pumps, the energy exchanger being connected to the absorption liquid circulating system.

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15. Apparatus as recited in claim 1 wherein the solar tracking drive comprises longitudinal pivot means, lateral pivot means and tracking control means.

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16. Apparatus as recited in claim 1 wherein one or more of the Fresnel lenses have an elongated focus for an elongated absorption zone on the energy absorbers.

17. Apparatus as recited in Claim 1 wherein one or more Fresnel lenses have longitudinal grooves with a linear distributed focus for a linear elongated absorption zone on the energy absorbers.

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18. Apparatus as recited in Claim 1 wherein one or more Fresnel lenses have oval grooves with a distributed focus for the absorption zones on the energy absorbers.

19. Apparatus as recited in Claim 1 wherein the energy absorbers have absorption
5 surfaces which are displaced radially from the focal point of the respective lenses for a distributed focus on the absorption zones of the energy absorbers.

20. Apparatus as recited in Claim 2 wherein the absorption conduits comprise one
10 or more pipes.

21. Apparatus as recited in Claim 1 further comprising an energy retaining capsule with a high solar energy transmission rate and a low thermal conductivity rate encapsulating each absorption zone.

15 22. Apparatus as recited in Claim 21 wherein the energy retaining capsule is spherical in shape.

23. Apparatus as recited in Claim 21 wherein the capsule is made of borsilicate
20 glass.

24. Apparatus as recited in Claim 2 further comprising a respective energy retaining capsule encapsulating each absorption zone on each absorption conduit.

25. Apparatus as recited in claim 24 wherein the energy retaining capsule comprises a conduit coating with a high solar energy transmission rate and a low thermal conductivity rate.

5 26. Apparatus as recited in Claim 25 wherein the conduit coating is made of borsilicate glass.

27. Apparatus as recited in Claim 25 wherein the conduit coating is ceramic.

10 28. Apparatus as recited in Claim 1 further comprising a respective absorption fin mounted in an interior absorption duct of one or more energy absorbers in the absorption zone.

15 29. Apparatus as recited in Claim 1 wherein one or more of the energy absorbers comprise an energy assimilator affixed on an absorption liquid conduit.

30. Apparatus as recited in Claim 29 wherein the absorption liquid conduits comprise one or more pipes.

20 31. Apparatus as recited in Claim 30 further comprising an energy retaining capsule with a high solar energy transmission rate and a low thermal conductivity rate encapsulating each absorption zone.

32. Apparatus as recited in Claim 31 wherein the energy retaining capsule is spherical in shape.

33. Apparatus as recited in Claim 31 wherein the energy retaining capsule is hemispherical in shape.

34. Apparatus as recited in Claim 31 wherein the energy retaining capsule is made of borsilicate glass.

35. Apparatus as recited in Claim 1 further comprising a respective absorption fin mounted in an interior absorption duct of one or more energy absorbers at the absorption zone.

36. Apparatus as recited in Claim 1 further comprising one or more secondary lenses affixed by a secondary lens frame to the support frame.

37. Apparatus as recited in Claim 14 further comprising:

- a) steam turbine, the steam turbine having an output shaft; and
- b) rotary generator affixed to the output shaft of the steam turbine.

38. Apparatus for solar energy collection comprising:

- a) one or more Fresnel lenses for concentrating incident solar energy, each Fresnel lens having a focal axis;
- b) absorption means for absorbing solar energy concentrated by the Fresnel lenses and transferring the absorbed solar energy to an absorption liquid;
- c) support means for supporting each Fresnel lens in a respective focus position for focusing solar energy passing the Fresnel lens on the absorption means; and
- d) solar tracking means affixed to the support means for maintaining alinement of the focal axis of each of the Fresnel lenses with the sun and maintaining each of the Fresnel lenses in a respective focus position during a desired period of operation.